<u>**REMARKS/ARGUMENTS**</u>

The Examiner is thanked for the performance of a thorough search.

No claims have been added, cancelled, or amended. Hence, Claims 1-43 are pending

in the application.

THE REJECTIONS BASED ON THE PRIOR ART

Claims 1-43 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by

U.S. Patent No. 6,643,797 to Horowitz.

CLAIMS 1 AND 23

Claims 1 and 23 recite,

> performing a first operation of said first plurality of operations associated with
> the atomic transaction;
> during said step of performing the first operation, detecting a first error that
> prevents completion of the first plurality of operations;
> in response to detecting the first error, performing a second plurality of
> operations for resolving the first error;
> determining whether a resolution of the first error is obtained in response to
> performing the second plurality of operations; and
> if the resolution is obtained, then ***resuming execution of the first plurality of
> operations***...(emphasis added).

The Office Action cites Horowitz's column 5, lines 45-67, and column 6, lines 18-28 and 47-

50, in support of the rejection of Claims 1 and 23. Column 5, lines 45-67, discuss processing

transactions on a First In First Out (FIFO) basis, using a comparison of checksums to detect

errors, and that the transactions being discussed are committed on an individual basis instead of

a batch basis. After a transaction, the single transaction and error value are written to a non-

volatile memory, and then the state of the transaction is changed from non-committed to committed (column 6, lines 1-17). Column 6, lines 18-28, discusses that during an I/O session a system failure may occur, and that the transaction and error detection value may or may not have been written to the non-volatile memory.

However, column 6, lines 26-29 state,

> Part of the recovery process is detecting and removing any transaction that is in a non-committed state, and *aborting* such transactions...(emphasis added).

In other words, in Horowitz part of the recovery process involves removing and aborting any transaction that is in a non-committed state. In contrast, Claims 1 and 23 recite

> detecting a first error...
> determining whether a resolution of the first error is obtained ...; and
> if the resolution is obtained, then *resuming execution of the first plurality of operations*

In contrast to Horowitz, in Claims 1 and 23, after detecting a first error, if the error can be resolved, the execution of the first plurality of operations (e.g., a transaction that did not commit) is resumed, whereas in Horowitz non-committed transactions are aborted and execution of non-committed transactions is never resumed. (It should be noted that a transaction can always be restarted from scratch. However, restarting a transaction is functionally different than resuming the execution of a transaction.)

Similarly, in step 210 of Horowitz, the error detection value (e.g., the checksum) is determined for those transactions that have completed, but for which the state of the transaction was not changed from non-committed to committed (column 6, lines 30-44). Then regarding steps 212-216, Horowitz states,

> *If a match does not occur then, the method proceeds from 212 (where the comparison took place) to 216, where the transaction is aborted.* However, if a match does occur, then the method proceeds instead from 212 (where the comparison took place) to 214, where the transaction is considered to have been committed. Thus, detection of whether a transaction has been completely processed or not, and therefore whether the

transaction has been committed or not, is afforded by the method of FIG. 2, while using only a single I/O session to write the data to the non-volatile storage.

In other words, if a match between error values (checksums) does not occur, then it is assumed that the transaction has an error, and the "transaction is aborted". Unlike Claims 1 and 23, in the cited passages of Horowitz, the execution of a transaction having an error is aborted and never resumed. In the method of FIG. 2 of Horowitz, there is a check for non-committed transactions, but if the reason that the transaction is non-committed transaction is because the transaction is incomplete or has an error, the transaction is undone, aborted, and never resumed. In contrast to Claims 1 and 23, in addition to not resuming the execution of a transaction that had an error, Horowitz does not attempt to resolve the error. Horowitz aborts the transaction having the error, whereas Claims 1 and 23 recite, "in response to detecting the first error, performing a second plurality of operations for resolving the first error".

CLAIMS 14 AND 36

Claims 14 and 36 recite,

if the first error occurs, then
>   determining whether data indicating a second pending request for a second
>   resource precedes the data indicating the first pending request in the data
>   structure, and
>   if the data indicating the second pending request precedes the data indicating the
>   first pending request, then responding to said call with data indicating the
>   first error.

The Office Action cites column 6, lines 18-26, which state,

> However, during the single I/O session, a system failure may result, such as a system crash, a loss of power to the system, etc. This is represented by the dotted line in FIG. 2. The system failure may also occur while the transaction and the error detection value are being written in 204, or after they have been written in 204, or at other times during the transaction. In 206, the system recovers from the failure. For example, the system may have to be rebooted, or otherwise restarted. Part of the recovery process is detecting and removing any transaction that is in a non-committed state, and aborting such transactions.

The contents of column 6, lines 18-26, were also discussed above regarding Claims 1 and 23.

In contrast to Claims 14 and 36, there is no discussion in column 6, lines 18-26, of a (1) "first

pending request" and a "second pending request", (2) of "determining" whether one piece of

data "precedes" another, or of (3) responding to a call based on the precedence determined.

Thus, there is no mention in column 6, lines 18-26, of (1) "determining whether data indicating

a second pending request for a second resource precedes the data indicating the first pending

request in the data structure" or (2) "if the data indicating the second pending request precedes

the data indicating the first pending request, then responding to said call with data indicating

the first error".

CLAIM 22

Claim 22 states

determining whether the first error is a member of a predetermined set of errors for
which corrective action is available for allowing the atomic transaction to be
completed; and
upon determining that the first error is a member of the predetermined set of
errors, performing a second plurality of operations for resolving the first
error,...
determining whether a resolution of the first error is obtained within a particular time
period in response to performing the second plurality of operations;
if the resolution is obtained, then *resuming execution of the first plurality of
operations*;...(emphasis added)

The Office Action cites column 5, lines 45-67, and column 6, lines 18-50, which were

discussed above in regard Claims 1 and 23. Similar to Claims 1 and 23, Claim 22 recites, if the

resolution of the error is obtained, the first plurality of operations is resumed, whereas the

passages cited by the Office Action recite aborting the transaction if there is an error, and never

discuss resuming execution of the transaction.

Additionally, the passages cited by the Office Action never discuss any "particular time period" or "determining whether a resolution of the first error is obtained within a particular time period in response to performing the second plurality of operations". Further, the Office Action (at page 7) states "The system failure would have to be a predetermined error in order to know how to recover from the failure", and thereby implies that Horowitz allegedly teaches Claim 22's recitation of "determining whether the first error is a member of a predetermined set of errors for which corrective action is available for allowing the atomic transaction to be completed". However, as discussed above regarding Claims 1 and 23, Horowitz teaches removing and aborting all transactions in which there is an error. Consequently, Horowitz does not teach making a determination that the "error is of a predetermined set of errors".

DEPENDENT CLAIMS

Claims 1-13, 15-21, 24-35, and 37-43 are dependent claims, each of which depends (directly or indirectly) on one of the claims discussed above. Each of Claims 1-13, 15-21, 24-35, and 37-43 is therefore allowable for the reasons given above for the claim on which it depends. In addition, each of Claims 1-13, 15-21, 24-35, and 37-43 introduces one or more additional features that independently render it patentable. For example, Claims 2 and 24 recite, "determining whether the resolution is obtained within a particular time period". As discussed in regard Claim 22, the passages of Horowitz cited by the Office Action never disclose any such "particular time period" or making any such determination. Similarly, in contrast to Claims 3 and 25, as discussed regarding Claim 22, the passages cited by the Office Action never disclose "determining whether the first error is a member of a predetermined set of errors", because Horowitz aborts transactions that have errors. Additionally, in contrast to Claims 4 and 26, column 6, lines 18-20, only state that an error may occur as a result of system

failure such as a power loss. Column 6, lines 18-20, do not disclose, for example, detecting that

the system failure was due to a power loss and do not disclose any other form of "detecting that

the first error indicates a lack of sufficient resources", contrast to Claims 4 and 26.

Due to the fundamental differences already identified, to expedite the positive resolution

of this case a separate discussion of all of the remaining such features is not included at this
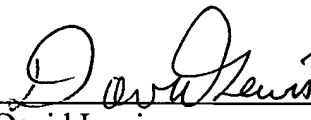
time.

For the reasons set forth above, it is respectfully submitted that all of the pending claims

are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is

believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is

believed that such contact would further the examination of the present application.

Please charge any shortages or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,
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